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REPORT TO THE GOVERNOR

PRESENTED BY THE

HARBOR RESIDUALS LANDFILL SITING ADVISORY COMMISSION

August 7, 1991

Boston, Massachusetts

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Executive Summary

The Harbor Residuals Landfill Siting Advisory Commission ("Commission") was established under an Executive Order by Governor William F. Weld on April 1, 1991 with the responsibility to identify landfill sites and/or technologies that are viable alternatives to the site in Walpole, Massachusetts, selected by the Massachusetts Water Resources Authority ("MWRA") to receive grit and screenings from the MWRA's facilities and to provide back-up capacity for sludge disposal from the MWRA's facilities. The Commission's responsibility included the determination of whether any such alternative sites or technologies could be permitted and operational by March, 1994, when the Walpole site is required to become operational under applicable orders of the U.S. District Court.

The Commission has held weekly meetings of the whole as well as many additional meetings of sub-groups to obtain information from proponents of various proposals, officials of regulatory agencies and potentially affected communities, and others. The Commission undertook to understand fully the background to the selection of the Walpole site and the needs the site was intended to fulfill, as well as the enforcement, permitting, design, procurement, capacity, and construction requirements that constrain any alternatives to development and use of the Walpole site. The text of the following report summarizes our assessment of those considerations, and includes detailed discussions of the criteria developed by the Commission to evaluate proposed alternatives.

The following is a compact statement of the goal defined by the Commission after completing its assessment of the problem:

> To identify a cost-effective, environmentally sound and permittable, timely solution to the long-term needs for back-up capacity for sludge disposal and for disposal of grit and screenings in a fashion that can win the acceptance of the affected local communities.

Our conclusions may be summarized as follows:

1. <u>Separate Issues: Back-up Capacity For Sludge Disposal and Disposal of Grit and Screenings</u>

   There is no technical or legal requirement for back-up capacity for sludge disposal to occur at the same facility used for grit and screenings disposal. While cost considerations possibly favor satisfying both needs at a single facility, such as the Walpole site, other approaches remain viable and may be superior for non-cost reasons.

2. <u>Multiple Sources of Back-up Capacity for Sludge Disposal</u>

The regulatory imperative for long-term certainty of back-up capacity for sludge disposal could be provided by means other than a single, MWRA-owned and MWRA-operated landfill within Massachusetts. The requisite certainty could arise equally well if the MWRA arranged multiple, overlapping sources of back-up capacity for sludge disposal. Arranging a package of alternatives would diversify the risk of relying upon any one technology or site, and reduce any burdens on affected communities within or outside of Massachusetts borders.

3. <u>Potentially Viable Alternatives</u>

The Commission reviewed eighteen proposed alternatives to the use of the Walpole site. Many of the proposals were rejected during the Commission's review period due to reasons of local community opposition, illegality, impossibility of timely development or permitting, inconsistency with the MWRA's basic sludge pelletization approach, or unproven technology. Of the sites proposed to the Commission, no single new landfill site comparable to Walpole appears feasible. Several potentially viable alternatives did emerge, as follows:

- For grit and screenings, commercial landfills currently take the MWRA's output under multi-year contracts. There is no reason to doubt the future reliability of this solution for grit and screenings, although use of commercial landfills may cost more than use of the Walpole site and fill up available capacity at such landfill facilities.

- For back-up capacity for sludge disposal, co-combustion with municipal solid waste at an existing municipal solid waste resource recovery facility appears technically feasible. The necessary procurement, permitting, and construction of facility modifications also appear manageable under the Court's schedule, although some uncertainties exist regarding compliance issues raised by the federal Clean Air Act Amendments of 1990. The Commission believes that sludge co-combustion with municipal solid waste at an existing facility need not present significant additional adverse local impacts, and could even help local communities solve their own municipal wastewater treatment sludge disposal problems. However, because community acceptance seems unlikely, the Commission is

not optimistic that this facility can be seen as an alternative to the Walpole site at this point in time.

- Expansion of the MWRA's sludge landfill in Clinton, Massachusetts, is a remote possibility to provide some of the necessary back-up capacity for sludge disposal. While the Clinton site is not sufficiently large to provide all of the required back-up capacity, it could possibly provide limited back-up capacity to increase the certainty of a package of alternatives. Community acceptance remains unsettled.

- Out-of-state sludge disposal capacity is likely to be available. The MWRA could procure permitted back-up capacity for sludge disposal in several out-of-state locations, including sludge landfills and sites where sludge is beneficially used for land reclamation. These could be arranged to be used either instead of Walpole (if the federal and state regulators would so allow), or in addition to Walpole. Such alternatives may be more costly than development or use of the Walpole site, but the real costs can not be known until the MWRA receives bona-fide offers from projects in response to a competitive request for proposals.

4. <u>Procurement, Permitting, and Scheduling</u>

The Commission's short life and limited resources have precluded development of a fully detailed package of feasible alternatives that can definitely meet the schedule established under the U.S. District Court's orders. The necessary detail can only emerge through concrete steps by the MWRA to plan and procure a package of specific alternatives, and through focused efforts by the MWRA, the United States Environmental Protection Agency ("EPA"), other regulatory agencies, and successful vendors of the alternatives to review such plans and allow the permitting and construction of any necessary new facilities under a schedule within the Court's mandated schedule.

Conclusion

The Commission therefore reports to the Governor that it cannot identify any specific site that definitely can substitute for the Walpole site under the Court-ordered schedule. The Commission also reports that it believes that a set of realistic alternative site(s)/technologies could possibly be developed and made ready to enable the MWRA to determine whether they are cost-effective compared to development and use of the Walpole site. To do so, however, the MWRA, EPA, and other parties would

immediately have to undertake the necessary negotiating, planning, procurement, permitting and construction activities.

The Commission does not agree with EPA's view that adequate certainty of back-up capacity can only be provided at an MWRA-owned or operated facility within Massachusetts. The Commission believes that the EPA is requiring an excessive level of certainty, not comparable to EPA's requirements in any other situation known to the Commission. EPA's justification -- that the history of non-compliance by the Commonwealth's MDC/MWRA justifies extraordinary remedies -- is unnecessarily punitive. The MWRA's commitment and success since its establishment in 1985 warrants EPA's accommodation and cooperation, not EPA's scorn. Cleaning up Boston Harbor requires cessation of sludge disposal to the Harbor, not construction of a landfill in Walpole. If adequate, although perhaps less certain alternatives can be developed, there no longer is any reason for EPA to require absolute certainty at the expense of imposing an unnecessary and unwanted facility upon Walpole and Norfolk.

The Commission recognizes the importance of states and communities taking responsibility for their waste management, and believes that the MWRA and the Commonwealth have done just that in developing the MWRA's basic sludge management approach. The MWRA is constructing a sludge pelletizing plant at Fore River, Quincy, from which the MWRA will market sludge pellets for beneficial reuse as fertilizers and other applications. The Commonwealth's Department of Environmental Protection has begun the process to modify its requirements governing land application of sludge, and to bring them into conformance with the standards of other jurisdictions. The Commonwealth has enacted legislation directing the MWRA to develop a program for MWRA communities and appropriate state agencies to take pellets for use as fertilizers where a more lucrative market or use does not exist. In light of these efforts, the Commission strongly urges, through the Governor, for the EPA to be flexible regarding the location of sludge back-up approaches, consistent with the approach EPA has allowed other municipalities in the United States to use to dispose of their sludge.

I. Introduction

This is the report of the Harbor Residuals Landfill Siting Advisory Commission ("Commission") established under an Executive Order (Appendix A) by Governor William F. Weld on April 1, 1991 to identify feasible sites or technologies as alternatives to the development and use of a site in Walpole, Massachusetts (the "Walpole site") as a landfill to accept grit and screenings, and possibly sludge, resulting from the treatment of sewage produced in the communities served by the Massachusetts Water Resources Authority ("MWRA" or "Authority").

The following sections of this report:

- State the background facts, legal requirements, and enforcement history that define and constrain the Commission's task;
- State the Commission's understanding of its task and describe our procedures and processes;
- Identify and discuss the criteria the Commission developed to evaluate proposed alternative sites or technologies;
- Provide a general description of the proposals received by the Commission, including the basis for screening out some of those proposals without detailed evaluations;
- Provide detailed reviews of potentially feasible sites or alternatives; and
- Present the Commission's conclusions and recommendations to the Governor.

Appendices to the report reprint a number of key documents, identified in the Table of Contents.

Several introductory points are appropriate to clarify the Commission's task and this report. First, the Commission's task has been to evaluate alternatives that currently offer themselves as options to the development and use of the Walpole site, not to assess the wisdom of the past selection of that site. Our review of current alternatives can take account of circumstances that were unknown or unsettled when the MWRA conducted its site selection process and federal and state regulators carried out their environmental reviews from 1986 to 1990. In particular:

- The MWRA is on-schedule on the significant elements of its harbor clean-up project.

- The risk of needing back-up capacity for sludge disposal has diminished substantially as the MWRA's sludge drying and pelletizing facilities in Quincy and sludge marketing program come close to reality.

- That risk has also been further reduced by two factors: the decision of the Commonwealth's Department of Environmental Protection to modify its sludge land application requirements and bring them into conformity with the standards of other jurisdictions; and the requirement in the May, 1991 state legislation transferring the Walpole site to the MWRA that the Authority establish a program requiring its 43 member communities to accept for their own use as fertilizer, sludge pellets produced by the pelletizing plant that are not sold or otherwise marketed.

- The MWRA has invested considerable sums to develop the facilities necessary to provide long-term sludge management at the Quincy pelletizing plant. The MWRA has not relied on out-of-state shipments of sludge as its primary long-term solution, as other communities have done.

In the Commission's view, the MWRA and the Commonwealth of Massachusetts ("Commonwealth") have clearly demonstrated by their conduct and initiative in addressing the Boston Harbor clean-up effort that EPA and the U.S. District Court should not require an excessive level of certainty regarding sludge management. It is now unreasonable to demand that back-up capacity for sludge will always be available at an MWRA-owned and controlled facility within Massachusetts. Rather, the MWRA should be allowed to rely instead on back-up measures comparable to those required of other wastewater treatment providers.

Our Commission's decision to consider a broader range of alternatives therefore results in part from the MWRA's commendable achievements over the six years of its existence. Our conclusions should not be read as a criticism of the MWRA's activities, including its procedures and decisions that led to the selection of the Walpole site.

Second, our identification of several, possibly feasible alternatives to the Walpole site does not mean that all uncertainties surrounding the feasibility of those alternatives have been eliminated. The Commission's limited time and resources, not to mention its membership of volunteers (Appendix B) carrying many other concurrent responsibilities, have constrained the depth of its evaluations of alternatives. The remaining uncertainties can be fully resolved only through negotiation, planning, procurement and permitting activities by

the relevant parties -- activities that are beyond the scope of the Commission's task or resources, but that are necessary to reach final conclusions as to the actual feasibility of potential alternatives.

Our conclusion that there may be alternatives -- largely out-of-state facilities -- to the use of the Walpole site shall, we trust and hope, nevertheless spur productive efforts by the Commonwealth, MWRA, EPA, and the United States District Court to reconsider use of the Walpole site. The Commission believes that good faith cooperation among those participants to undertake the necessary efforts certainly can lead to the development of an alternative to the use of the Walpole site.

II. Background

Any realistic alternatives to the development and use of the Walpole site for Boston Harbor residuals must account for a complex set of historical commitments and legal requirements governing the Commonwealth's and the MWRA's long-deferred compliance with the federal Clean Water Act. This section summarizes that background to assure recipients of the Commission's recommendations that the Commission has properly appreciated the background constraints.

1. Clean Water Act and the MDC

Clean Water Act Requirements - In 1972, Congress enacted Federal Water Pollution Control Amendments which federalized water pollution control and created the basic structure of the federal Clean Water Act as it exists today. That legislation mandated that municipal sewage should receive at least "secondary" treatment by 1977. In 1977 and 1981, Congress amended the Clean Water Act and created the possibility that municipalities could receive waivers of the secondary treatment requirement for qualifying discharges to marine waters. The discharge of sludge, however, was never subject to a waiver possibility and has been illegal since 1977.

MDC System - Until 1985 the municipal sewage from 43 metropolitan Boston cities and towns was handled by the Sewerage District of the Metropolitan District Commission ("MDC"), an agency of the Commonwealth. The MDC system provided only "primary" treatment - use of settling tanks to remove only a third of the solids from the sewage, plus disinfection. The MDC had two primary treatment plants: a facility at Deer Island in Boston, and a facility at Nut Island in Quincy. The solids removed from the sewage through primary settling - sludge - were nevertheless discharged from Deer Island to Boston Harbor on the outgoing tides.

MDC Facilities Planning - After the enactment of the federal legislation in 1972, and continuing its own prior planning, the MDC undertook facilities planning and environmental reviews to upgrade to secondary treatment and to eliminate the discharge of sludge. With respect to sludge disposal, planners at the MDC and at EPA selected incineration at Deer Island as the most acceptable approach. These planning efforts included the completion of an Environmental Impact Report concerning sludge alternatives in 1979 by EPA Region I, which concurred in the MDC's selection of incineration at Deer Island. By that time, however, the Commonwealth's Executive Office of Environmental Affairs was cool to incineration, and the MDC commenced renewed evaluations.

Delay Due to Waiver Application - The Congressional establishment in 1977 of potential waivers of secondary treatment requirements for discharges to marine waters led the Commonwealth to forestall progress towards achieving secondary treatment for the MDC system while it pursued the waiver opportunity. That pause in decision-making on the required level of treatment also stalled the Commonwealth's decision-making on sludge disposal, even though a waiver of secondary treatment requirements would not have eliminated the requirement to cease disposal of sludge into Boston Harbor. Determination of the waiver application took a number of years, partly because the 1981 Congressional amendments provided an opportunity for the MDC to renew its application for a waiver even after its initial application was denied by EPA. The secondary treatment issue was not ultimately resolved against a waiver until the mid-1980's.

2. Litigation and Establishment of MWRA.

In 1982 and 1983, two lawsuits were commenced to force an end to the MDC's and EPA's indecision.

Quincy's State Court Suit - First, the City of Quincy commenced an action in Massachusetts Superior Court in 1982 against the MDC and other state defendants. That Court, per Hon. Paul Garrity, found the MDC in violation of state and federal law, and appointed a Special Master to report to the Court on remedies. In 1984 the Special Master recommended that the Commonwealth establish a new, independent agency to take over the MDC's Sewerage Division, and to have the means and mission to remedy the violations of law.

CLF's Federal Court Suit - A second lawsuit against the MDC and state officials, as well as against the EPA, was filed in 1983 in U.S. District Court by the Conservation Law Foundation of New England, Inc. ("CLF"). CLF alleged both that the MDC and state officials were in violation of federal requirements concerning sewage treatment and sludge disposal, and that EPA had failed its duties in not taking adequate enforcement. The action was assigned to Hon. A. David Mazzone. In response to urgings by the state defendants, Judge Mazzone stayed CLF's action due to the prior pendency and adequacy of the action in state court before Judge Garrity.

Establishment of MWRA - In response to the state Court's pressure and public opinion, the Governor sponsored and the Legislature enacted legislation in 1984 establishing the Massachusetts Water Resources Authority. The MWRA came into existence on January 1, 1985, and took over the MDC's Sewerage District on July 1, 1985.

EPA's Federal Court Suit - In January, 1985, EPA finally commenced its own action in U.S. District Court naming the MDC, the MWRA, and state defendants. EPA's action was consolidated with CLF's prior federal court action. This time Judge Mazzone declined the state defendants' request for a stay. Judge Mazzone found liability against the defendants in September, 1985. Since then he has supervised a comprehensive set of enforcement orders governing all aspects of the MWRA's efforts to bring the metropolitan sewer system into compliance with the Clean Water Act.

3. Residuals Management Facilities Planning and Selection of the Walpole Site.

Pursuant to its own mandate and Judge Mazzone's requirements, from its outset the MWRA has conducted extensive facilities planning concerning all of its operations. With respect to secondary treatment, the MWRA determined in 1985 to convert its Nut Island facility into a pumping station, and to convey the entire system flows to an upgraded secondary treatment facility at Deer Island. Design and initial construction of those facilities are underway, with full secondary treatment to be achieved in 1999.

Identification of Residuals - A distinct component of the facilities planning has addressed the "residuals" from the MWRA's existing and planned facilities. Two categories of residuals are significant to this Commission's task: grit and screenings, and sludge. Screenings consist of the bulky materials removed from the sewage flow at the front end of headworks, pumping stations and treatment facilities. Grit is removed from the sewage flow in the first step of treatment. Sludge consists both of the solids removed through settling by primary treatment, and the solids removed through settling after secondary treatment. Dewatered sludge, or sludge cake, consists of sludge that has had some percentage of its water removed by heat or pressure to decrease its volume. Sludge pellets consist of sludge cake that has been dried and had its volume further reduced by the removal of much of the remaining water. The material is then made into pellet form for ease of distribution and possible use as a fertilizer.

Facilities Planning Overview - From 1986 through 1990, the MWRA and EPA, using consultants, conducted an elaborate course of facilities planning, design and environmental reviews devoted to residuals management. The agencies screened 300 potential sites for processing and disposal of Boston Harbor residuals, once again reviewed technologies including landfilling, reuse, combustion, and composting, considered the need for back-up capacity for sludge disposal in the event that a first-level

choice should fail, and coordinated residuals management planning with the facilities planning for wastewater treatment.

Interim Facilities - The planning efforts included both interim facilities and permanent facilities. The interim facilities were planned to meet the Court's mandate to cease discharges of sludge to Boston Harbor by the end of 1991. The permanent facilities are needed to handle the long-term and increased quantities of sludge that the MWRA will generate at improved primary and secondary treatment facilities at Deer Island after 1995.

For the interim facilities, the resulting decision of the MWRA, approved by EPA, was to build a sludge drying and pelletizing facility at the Fore River Staging Area, formerly the General Dynamics shipyard, in Quincy, Massachusetts. In March, 1988, the MWRA contracted with the New England Fertilizer Company ("NEFCo") to design, permit, construct, and operate the necessary facilities in Quincy. Under the contract, from 1991 to 1995 NEFCo will barge sludge from the Deer Island and Nut Island facilities to the Quincy site where NEFCo will dewater the sludge, turn it into pellets, and market this fertilizer on behalf of the MWRA in both the bulk agricultural and retail turf fertilizer markets.

Significantly, NEFCo's contract obligates it to handle all of the MWRA's sludge even if NEFCo's marketing program fails because of product quality or regulatory problems. The MWRA contract with NEFCo thus provides both primary sludge processing and back-up capacity to the Authority at a price reflecting this risk borne by NEFCo. The EPA and state regulators approved this contract-based method of disposal.

Permanent Facilities - With respect to permanent facilities, the MWRA decided in early 1989 to expand the sludge drying and pelletizing operations in Quincy when necessary to accommodate the increased volumes from secondary treatment. As with the interim facilities, sludge will be barged from the improved Deer Island treatment facilities to Quincy; sludge will no longer be barged from the Nut Island facility which will have been converted to a pumping station. As with the interim facilities, the expanded permanent facilities will convert the sludge to pellets for land application.

The MWRA will have the option in 1996, after its existing contract with NEFCo expires, to take over the production and marketing of the pellets, or to continue engaging a contractor to manage some or most of those functions. The MWRA has already commenced efforts to develop long-term product use agreements with potential users of the pellets to take effect during the interim phase or thereafter.

Back-up Capacity - Another component of the long-term residuals management facilities planning was to identify back-up capacity for sludge disposal to assure that a failure of the basic plan would not lead the MWRA to revert to sludge disposal into Boston Harbor. Both EPA and the Commonwealth's Department of Environmental Protection ("DEP") insisted that the MWRA provide some back-up capacity for the permanent facilities. DEP requires all sludge generators to provide capacity to dispose six months' of sludge production at peak volumes at a facility directly controlled by the generator. EPA, as a condition to allowing reliance on a market-driven beneficial reuse option, insisted that the MWRA provide back-up capacity sufficient to account for significant, chronic shortfalls in the marketing program throughout the 1995-2020 period.

To be precise, EPA has never mandated a specific back-up disposal option for the MWRA to use. EPA has, however, required that the method chosen by the MWRA as a back-up be legal, within the reasonable direct control of the MWRA, and within the Commonwealth.

Selection of Landfill - To meet the requirement of back-up capacity for sludge disposal, the MWRA ultimately settled upon a landfill at the Walpole site. The MWRA chose landfilling for several reasons. Apart from the issue of back-up capacity for sludge disposal, the MWRA must dispose of grit and screenings. The only feasible method to dispose of such "minor residuals" is landfilling. The MWRA's facilities planners reached the conclusion that only development of an MWRA-owned, dedicated residuals landfill would satisfy state and federal regulators. The MWRA's cost analysis also showed that public ownership over the long-run would be more cost-effective for the MWRA and its ratepayers than continued use of commercial landfills.

Having reached that conclusion, utilizing the same MWRA-owned and controlled landfill to provide back-up capacity for sludge disposal also became cost-effective and administratively attractive.

Specification of Necessary Back-up Capacity - The specifics of these decisions by the MWRA, including the quantification of the necessary back-up capacity, also were set out in a letter of agreement executed by EPA and the MWRA in August 1989. A copy of that agreement is included as Appendix C to this report. The agreement recited the MWRA's intent to develop a landfill to accept grit and screenings and to provide back-up capacity for sludge, and set out the EPA's and MWRA's agreement as to the required capacity. From that time, both the Authority and the EPA have remained steadfast in their commitment to the development of an MWRA-owned and operated landfill as the

solution to the disposal of grit and screenings and to the need for back-up capacity for sludge.

Selection of Walpole Site - The MWRA's specific selection of the Walpole site for its proposed landfill resulted from additional considerations. First, the Walpole site met the repeatedly expressed view of the MWRA's Board of Directors that the landfill should be sited within the boundaries of an MWRA member community, for reasons of equity and, it hoped, greater community acceptance. The MWRA's as well as EPA's and DEP's environmental evaluations of the Walpole and other proposed sites all concurred that the Walpole site was environmentally acceptable, and superior to other sites. Since all communities closely examined for a potential site for the MWRA landfill exhibited local opposition, the local opposition in Walpole and Norfolk did not represent a major deterrent in the MWRA's decision-making.

Accordingly, in December, 1988 and February, 1989, and again in July and December 1989, the MWRA's Board of Directors voted to approve the Walpole site for its proposed landfill, and to complete the facilities planning and commence the permitting activities necessary to develop the site. The MWRA's facilities planning and environmental review culminated in the approval of its Final Environmental Impact Report by the Commonwealth's Secretary of Environmental Affairs in November, 1989. EPA's own environmental reviews concluded with its issuance of a Record of Decision accepting the MWRA's long-term residuals management plan, including selection of the Walpole site, in March, 1990.

4. The Walpole Site Controversy.

The MWRA's and EPA's facilities planning and environmental review procedures included substantial opportunities for public comment and participation. Local opposition arose at each of the sites selected by EPA and MWRA for close attention, including in Walpole and Norfolk with respect to the potential site there.

Upon the selection of the Walpole site, the affected communities (Walpole, as well as its neighbor, Norfolk) and some of their citizens commenced litigation in state and federal court to overturn the decision, and also pressed legislators and candidates for elective office to block the selection. The communities' opposition rested both on environmental concerns, particularly the siting of the landfill on or near a ground water aquifer serving as drinking water supply, and on disputes about whether an MWRA-owned landfill within Massachusetts was so essential or cost-effective to satisfy the needs for disposal of grit and screenings and for back-up capacity for sludge disposal.

The communities' litigation efforts have not overturned the selection. Both state courts and the U.S. District Court (per Judge Mazzone) have denied the communities' challenges to the site selection.

The communities' entreaties to elected officials have been more successful. In December 1990, legislation filed by the former Governor to transfer ownership of the Walpole site to the MWRA was defeated in the Legislature. Each of the candidates for Governor in the Republican and Democratic primaries in the Massachusetts elections of 1990 expressed opposition to the selection, and pledged, if elected, to attempt to find alternatives.

5. **The Federal Court's Orders Regarding the Walpole Site.**

Under the federal court's orders, however, the Commonwealth and MWRA have been under obligations to finalize and implement the long-term residuals management plans. Specifically, in May, 1989, the Court issued a long-term scheduling order which included a requirement that the Commonwealth and the MWRA proceed immediately to develop a schedule for design, construction, and operation of the long-term residuals management facilities to be operational by 1995. On October 31, 1990, the Court issued an order imposing the current long-term residuals management schedule.

During the time intervening between May, 1989 and the entry of the final schedule in October, 1990, the MWRA and EPA had completed their facilities planning and environmental reviews for the selected site in Walpole. Those decisions enabled the Court to tighten the original schedule for commencing operations of the long-term residuals management plan from 1995 to the current mandate of March, 1994. The order incorporates the schedule made feasible by the MWRA's and EPA's final selection of the Walpole site although the order does not specifically mandate the Walpole location as such for the mandated landfill. It requires completion of the design of a landfill for grit and screenings and sludge disposal back-up by November, 1991, commencement of construction by no later than September 1992, and operation of the landfill by March, 1994.

In 1990, EPA became concerned about the inability of the Commonwealth and MWRA to obtain legislative approval of the transfer of the Walpole site. EPA sought an order from Judge Mazzone in June, 1990, transferring the site from the Commonwealth to the MWRA, or in the alternative, imposing civil penalties or a moratorium on new discharges to the metropolitan sewer system pending legislative action transferring the site. At that time, Judge Mazzone deferred action on EPA's request

while indicating his readiness to enter appropriate relief if the Legislature failed to act by a date in December, 1990.

When additional efforts to obtain the necessary legislative approval failed in December, 1990, EPA renewed its request that Judge Mazzone take enforcement action. On February 25, 1991, Judge Mazzone entered an order generally enjoining new or increased discharges to the metropolitan sewer system pending approval of legislation transferring the site to the MWRA. The Commonwealth's emergency appeal to the First Circuit Court of Appeals was unsuccessful. In light of the drastic consequences of the sewer moratorium on the economy of the metropolitan Boston area, on May 20, 1991 the Legislature enacted and the Governor signed legislation that conveyed the site. Judge Mazzone lifted the sewer moratorium the next day.

6. Current Status.

Walpole Landfill - With the enactment of the transfer legislation, the MWRA now owns the site and is on course under the Court's mandates. An MWRA engineering consultant is finalizing design for the proposed landfill which are required by the Court's schedule to be complete by November, 1991. Because local and state opposition delayed field testing, the MWRA is behind on this milestone. All necessary permits to develop the landfill have been obtained, excepting final permitting associated with approval of final design plans. The MWRA is prepared to commence construction of the landfill by January 1993, and to complete construction and commence operations by March, 1994.

Grit and Screenings Disposal - Grit and screenings from the MWRA's facilities currently are collected and transported to several commercial solid waste landfills under several multi-year contracts, which are scheduled to end with the availability of the Walpole landfill.

Sludge - Sludge continues to be discharged from Deer Island and Nut Island. That practice is scheduled to cease on January 1, 1992, when MWRA will commence barging the sludge to the interim facilities under construction in Quincy. These facilities are fully permitted, and expected to come on line in timely fashion.

III. The Commission's Charge and Procedures.

The Commission's charge, as established in Governor Weld's Executive Order No. 305, dated April 1, 1991 (Appendix A), was stated as follows:

> It is the responsibility of the Commission to:
>
> a. identify, investigate and analyze landfill sites and/or technologies which it deems to be viable alternatives to the Walpole site; and
>
> b. to determine which sites and/or technologies could be permitted and operational by March 1994, consistent with the Court's schedule; and
>
> c. to report to the Governor the result of its work not later than August 1, 1991.

The Executive Order also called for the appointment of nine members, including the Secretary of Environmental Affairs. The members of the Commission are identified in Appendix B.

Since its establishment, the Commission has held weekly meetings of the whole, as well as many additional meetings of sub-groups to obtain information from proponents of various proposals, from officials, and from others. These meetings have been private, as the Commission members determined from the outset that its activities would more likely succeed if it proceeded discreetly. The Commission also received advice from the Office of the Attorney General that its meetings were not subject to the Open Meeting Law.

In its initial meetings, the Commission focused principally upon familiarizing its membership with the problem to be solved, and upon identifying the general criteria that viable alternatives to use of the Walpole site must meet. These criteria were stated in a solicitation letter, attached as Appendix D, sent in May, 1991 to the chief municipal officer of each of the 351 Massachusetts cities and towns, with copies to each Senator and Representative in the General Court.

In addition to preparing the solicitation letter, the Commission also used word-of-mouth methods to solicit proposed alternatives. These efforts were assisted by the publicity surrounding the Walpole site controversy and establishment of the Commission, and by the pre-existing efforts by the Walpole and Norfolk communities to identify potential alternatives.

In response to these efforts, the Commission received approximately 18 proposals for alternative sites and/or

technologies, which are identified and discussed below. Subgroups of the Commission members, composed of at least two members, met separately with proponents of each of the proposals. More than one meeting was held with respect to many of the proposals, as were meetings with representatives of affected communities or regulatory officials. Through these means, including the regular discussions of the proposals at the Commission meetings of the whole, the Commission screened out certain proposals as discussed below, and focused on the viability of others. In the end, no community volunteered to host a facility, although developers of potential projects and operators of existing facilities in Massachusetts offered their own proposals.

It bears noting that the nature of the Commission's charge - the time frame, the complexity of the issue, the absence of any budget, and the volunteer participation - constrained the Commission to evaluating proposals received by it. The Commission has not sought, because it could not, to develop and recommend a specific optimal alternative. Implementation of any specific alternative, in any event, will be contingent upon successful negotiations with EPA and the Court, permitting procedures, and procurement procedures that the MWRA by law must follow. Accordingly, the Commission's report is limited to identifying alternatives that it believes could possibly be implemented if the responsible participants (that is, EPA, the MWRA, the Court, the project developers, and the affected communities) so chose.

IV. Problem Definition and Discussion of Criteria for Solution.

The Commission has spent a considerable proportion of its time together considering the problem to be solved and the criteria for acceptable solutions. Our preliminary views were embodied in the letter solicitation included as Appendix D, which was sent in May 1991 to all chief municipal officers. Our further activities have refined our views, as follows.

At base, the problem to be solved has two components. First, the MWRA must dispose of grit and screenings from its facilities. Second, the MWRA must provide long-term back-up capacity for sludge disposal to account for the possibility that its long-term sludge drying and sludge pelletizing facilities in Quincy could suffer a drastic operational or marketing failure.

The task of satisfying those two objectives in 1991 differs in many significant respects from the objectives of the MWRA's long-term residuals management planning from 1986 to 1990. Most importantly, the Commission has been able to take the existence of the sludge drying and sludge pelletizing facilities in Quincy as a given. Before now, the MWRA did not have the benefits of such certainty. The reduced uncertainty about the MWRA's selected primary option for sludge management necessarily influences the degree of absolute certainty needed for back-up capacity. Also, the acceptance of the choice of sludge pelletizing and reuse as the primary method of sludge management has meant that the Commission did not need to consider possibilities which were substitutes for sludge pelletizing, rather than supplements.

In other respects, as well, the Commission has had a freer hand than the MWRA to consider alternatives. In the context of deciding the MWRA's overall residuals management system, the MWRA's Board of Directors determined for reasons of fairness and control that all of its sludge management facilities should be located within the bounds of its member communities. The MWRA's Board of Directors also determined that sludge re-use was a much superior approach as a primary means of sludge disposal, as compared to landfilling or combustion. The Commission wholeheartedly endorses the MWRA's decisions in this regard.

With respect to back-up capacity for sludge disposal, however, it is no longer clear that combustion or locations in non-MWRA communities should be forsworn. It is uncertain whether the back-up capacity would ever actually be utilized; many view that likelihood as small. The equitable and environmental impacts of combustion, or of disposal locations in non-MWRA communities, are much reduced when discussing back-up capacity. For these reasons, the Commission has been free to consider

combustion and locations in non-MWRA communities as potential alternatives.

After working through these issues with much discussion, the Commission developed a list of nine categories of criteria under which to evaluate proposed alternatives to the Walpole site. The Commission's view is that an alternative, to be viable, must meet or exceed at least most of the criteria. The Commission also determined that it should review proposals that did not necessarily meet all of the criteria now, since it believes that some possibility remains available to negotiate with EPA. The nine criteria fall within the following categories:

1. Community Acceptance.
2. Schedule and Permitting.
3. Capacity and Life Span.
4. Cost.
5. Environmental Considerations.
6. Technology.
7. Location.
8. Capacity Assurance.
9. Partial and Multiple Alternatives.

Each of these categories is discussed in turn below.

1. Community Acceptance.

A key criterion is that a proposed alternative be able to demonstrate community acceptance of the facility. The MWRA and the EPA should not be expected to develop and pursue alternatives to the approved Walpole site that simply open new battles with local communities. Additionally, significant local opposition to a proposed alternative almost certainly would prevent timely development of the alternative under the Court's timetable.

For this report, the Commission determined that it was unnecessary for an alternative to demonstrate definitive community support for the Commission to identify a proposal as a potentially feasible alternative to use of the Walpole site. Whether or not a proposal can win community acceptance is difficult to assess until a proposal has sufficient detail for the community to respond. Accordingly, the Commission has deemed several proposals potentially feasible because it believes the proposals might be able to win local acceptance, although the issue remains unsettled.

2. Schedule and Permitting.

Under the Court's current schedule, and given known delays, construction of the landfill at the Walpole site must commence by January, 1993, and the facility must become operational by

March, 1994. The MWRA, the EPA and the U.S. District Court have expended great effort, over significant opposition, to assure site availability on that schedule. A realistic alternative to development of the Walpole site, accordingly, must take account of that schedule as well as meet the basic objectives. Indeed, the Commission's explicit tasks identified in the Governor's Executive Order include to determine whether any proposed alternatives can meet that schedule.

In considering this issue, the Commission has observed that the current schedule has some arbitrariness. First, the current schedule was developed in 1989 and 1990 based upon the selection of the Walpole site and a feasible timetable for implementing that selection. Quite likely, the current schedule would differ had another alternative been selected by MWRA and EPA.

Indeed, the Walpole site was developed as part of the MWRA's long-term residuals management facilities planning, which initially operated under a court mandate to implement the long-term plan by 1995. The shortened time for implementing the long-term plan for back-up capacity for sludge disposal arose due to the selection of the Walpole site, not from any independent mandate. Unlike the December 31, 1991 deadline for commencement of the operation of the interim facilities, which was mandated in part by Congressional mandates, the March, 1994 deadline arises exclusively from the particular circumstances of the Boston Harbor enforcement case.

Similarly, commencement of operation of a landfill for back-up capacity for sludge disposal at a particular date is inherently arbitrary. While the availability of back-up capacity is always advantageous, the absence of back-up capacity poses only risk rather than definite harm. Indeed, the MWRA, EPA and U.S. District Court have tolerated an interim residuals management plan that does not provide for any back-up capacity owned and controlled by the MWRA. Ironically, that absence of back-up capacity will occur at the outset of sludge pelletizing operations and marketing, just when the need for back-up capacity would seem most pressing. Instead, the requirements for back-up capacity have only been imposed for time periods after the sludge pelletizing facility and marketing program presumably will have passed their shake-down period and move to normal, mature operations.

For these reasons, the Commission believes that the MWRA, EPA and U.S. District Court should not inflexibly insist upon the current schedule if otherwise acceptable alternatives to the Walpole site can be reliably and credibly developed upon a timetable reasonably close to the current schedule.

In accord with its mandate, however, the Commission has evaluated each of the proposals it reviewed to determine the likelihood of meeting the current schedule. In conducting those evaluations, the Commission was mindful of the current reality that the MWRA is proceeding to design and to obtain final permits for the Walpole site, and expects to commence construction by January, 1993. For any feasible alternative to emerge as an actual alternative, that alternative not only must be able to meet the March, 1994 date, but also must become sufficiently real by January, 1993 to allow the MWRA, with EPA and the U.S. District Court's consent, to forego commencement of construction at Walpole starting in January, 1993.

Strictly, that circumstance may require that feasible alternatives to the Walpole site must be fully planned, permitted and designed, with EPA's and the U.S. District Court's concurrence, by January, 1993 in order to substitute for commencement of construction of the Walpole site. Completion of those activities within seventeen months, the time period from the date of this report to January, 1993, presents very substantial obstacles, particularly to any completely new facilities. Completion by January, 1993 of at least the following activities would be required:

- facilities planning activities by the MWRA, in cooperation with EPA and DEP, to detail the specifications of a proposed alternative or alternatives;

- possibly, supplemental environmental impact reviews by the Secretary of Environmental Affairs under the Massachusetts Environmental Policy Act and by EPA under the National Environmental Policy Act, in coordination with the revised facilities planning;

- procurement by the MWRA and by EPA of any consulting services to carry out the foregoing;

- procurement by the MWRA of any design and permitting services for any new MWRA-owned and operated facilities, or in the alternative, procurement by the MWRA from vendors of facilities that would not be owned or operated by the MWRA;

- application for and receipt of all necessary permits or permit amendments;

- demonstration that completion of permitting, design and capacity to construct and operate can occur by March, 1994; and

- resolution of significant issues of local community acceptance.

Completing that list of activities within seventeen months obviously will be difficult even assuming active cooperation between EPA and the MWRA.

Timely completion of those planning, permitting, and procurement activities are made even more difficult, however, by the likelihood that the EPA, having devoted so much effort to locking in the Walpole site, may be reluctant to cooperate in a serious effort to develop alternatives. Indeed, that circumstance, plus the inherent difficulty of developing a timely alternative, may lead the MWRA's Board of Directors to question the advisability of expending significant resources to pursue an alternative concurrently with having to proceed anyway with the expense of design and procuring construction of the Walpole site.

In this report, the Commission cannot predict the resolution of all of those potential difficulties. Rather, the Commission can only identify the difficulties and then evaluate the potential of proposed alternatives to succeed despite those difficulties. As detailed later in the report, the Commission has identified several alternatives which it believes could satisfy the scheduling mandates with good faith efforts by the relevant parties. The Commission also repeats its view that EPA and the U.S. District Court should also consider relaxing those schedules if otherwise acceptable alternatives to use of the Walpole site emerge and can be developed on a sufficiently similar schedule.

3. Capacity and Life Span.

The Commission determined that alternatives to the Walpole site must provide at least the same capacity as the Walpole site for the time span, twenty-five years from 1995 through 2020, covered by the MWRA's long-term facilities management plans, since that amount of capacity and that life span are EPA's and the U.S. District Court's minimal requirements.

As to grit and screenings, the landfill at the Walpole site is intended to receive approximately 80 tons per day, approximately four, 20-cubic-yard truckloads, through the year 2020.

As to back-up capacity for sludge disposal, the required capacity was established in the letter agreement between EPA and MWRA of August, 1989, attached as Appendix C. That amount of capacity is equal to about three years of sludge cake disposal, or about fourteen years of pellets (equivalent to one-half of the pellet production at Quincy for the entire twenty-five year

period of the residuals plan). The letter agreement includes a formula that specifies the reduced amounts of back-up capacity required as the years pass. At all times, under DEP's and EPA's requirements, the MWRA must maintain sufficient back-up capacity in a condition ready to absorb six months' production of sludge cake.

The Commission has therefore evaluated each of the proposals presented to it to determine whether the proposal can supply the forgoing capacity requirements. The Commission notes, however, that the MWRA selected an MWRA-owned and controlled landfill to meet the basic objectives partly because it expects such a landfill to provide capacity far in excess of these minimum requirements. Specifically, the MWRA, as does the Commission, believes that little or none of the substantial back-up capacity for sludge disposal that would be created at the Walpole site will actually be utilized for sludge disposal. Instead, the sludge pelletization program should succeed in marketing the pellets, and the Walpole site will not be used for sludge disposal. The Commonwealth's recent proposal to allow land application of sludge greatly reduces the likelihood that sludge will be sent to Walpole. In that eventuality, the landfill at the Walpole site would remain available to the MWRA well beyond the year 2020 for continued disposal of grit and screenings, as well as continued back-up capacity for sludge disposal. Since the Commission has not been charged to conduct any comparison between development of the Walpole site and any feasible alternatives, however, the Commission has not taken those post-2020 values of the Walpole site into account in completing its assigned task simply to identify feasible alternatives to use of the Walpole site.

4. Cost.

Cost issues were difficult for the Commission to evaluate. Our limited time and resources and the informality of our procedures precluded the identification of precise cost estimates for any of the proposals presented to us. Clear cost comparisons with the MWRA's projections for development and use of the Walpole were accordingly impossible. The Commission concluded that the necessary precision could only occur through more detailed planning efforts and, in some case, only through receipt of formal proposals in response to a precise bona-fide procurement process.

Nevertheless, the Commission did take account of cost considerations. First, the Commission believes that any feasible alternatives to the Walpole site cannot bear unacceptably higher costs, particularly in light of the significant investment to date in selection, permitting, and design of the Walpole site, and in light of the significant costs to ratepayers associated

with the overall Harbor clean-up project. The responsibilities of the MWRA's Board of Directors to its ratepayers preclude pursuing alternatives that are many times more expensive than use of the Walpole site.

In this report, the Commission finds it cannot fully resolve any issues of cost comparison among the potentially feasible proposals it has identified and the continued use of the Walpole site. While cost considerations are discussed for each of the proposals evaluated in depth, the final resolution must await further steps by the MWRA to pursue any of the alternatives. The Commission believes that it would be worthwhile for the MWRA to examine bona-fide proposals offered in response to a formal request for proposals, in order to answer hard questions surrounding cost.

5. Environmental Considerations.

As a matter of course, any feasible alternatives to the Walpole site must be environmentally acceptable. Generally, the Commission expects that environmental compliance will be assured through the permitting procedures applicable to any alternative. The Commission did review all of the alternatives for any obvious flaws in this respect, and did reject several ocean dumping proposals for illegality under the current statutes of the United States. Certainty about environmental acceptability will only become available, however, after further planning and permitting activities with respect to any of the alternatives.

6. Technology.

The Commission determined that it should consider any technology, not limited to landfill disposal, that is available and satisfies the other necessary criteria. It determined that any technology practically considered, however, must be a proven technology, since only such types could meet the required development schedule.

In particular, for the reasons outlined above, the Commission determined to consider combustion of sludge as a possible means of providing back-up capacity. The Commission learned that the MWRA had not seriously considered combustion as a means of back-up capacity, once the MWRA had rejected incineration generally as a primary disposal methodology.

7. Location.

The Commission agreed to consider any location, in or out of Massachusetts and in or out of the MWRA's member communities. This counters the EPA's insistence that the MWRA always maintain sufficient back-up capacity for sludge disposal within Massachusetts, even if the MWRA also utilizes non-Massachusetts back-up capacity first. The Commission's approach also differs from the MWRA's plans, based on equity, to have all residuals management facilities within its member communities.

With respect to the Commission's difference with the EPA, the Commission does not agree with EPA's view that adequate certainty of back-up capacity can only be provided at an MWRA-owned or operated facility within Massachusetts. The Commission believes that the EPA is requiring an excessive level of certainty, not comparable to EPA's requirements in any other situation known to the Commission. EPA's justification -- that the history of non-compliance by the Commonwealth's MDC/MWRA justifies extraordinary remedies -- is unnecessarily punitive. The MWRA's commitment and success since its establishment in 1985 warrants EPA's accommodation and cooperation, not EPA's scorn. Cleaning up Boston Harbor requires cessation of sludge disposal to the Harbor, not construction of a landfill in Walpole. If adequate, although perhaps less certain alternatives can be developed, there no longer is any reason for EPA to require absolute certainty at the expense of imposing an unnecessary and unwanted facility upon Walpole and Norfolk.

With respect to its variance from the MWRA's position, the Commission endorses the Authority's preference for siting of its major facilities within its member communities. That principle, however, cannot and should not be absolute. Many aspects of the MWRA's operations extend beyond the bounds of its communities, and are acceptable and unremarkable because the impacts are negligible. Just as grit and screenings are currently trucked to commercial landfills beyond the bounds of the MWRA's communities, so may they be in the future. Just as the pellets from the planned Quincy facilities are expected to find markets far beyond the MWRA's communities, so can back-up capacity for sludge disposal reasonably occur beyond those communities. There is no reason for the MWRA to bind itself to unnecessary principle in this respect, especially now that the MWRA is in a position to compare a known, available option (i.e., Walpole) with an option possibly volunteered by a non-member community.

8. Capacity Assurance.

The Commission determined that feasible alternatives to the Walpole site certainly must provide adequate assurance to EPA and the U.S. District Court that sufficient back-up capacity for

sludge disposal for the years 1995 to 2020 will certainly be available. Each of the proposals was evaluated to determine its ability to help the MWRA provide that certainty.

For the reasons outlined above under the location heading, however, the Commission does not accept EPA's position that such certainty can only occur at an MWRA-owned and controlled facility within Massachusetts. The Commission believes that the MWRA could procure sufficiently certain back-up capacity through normal contracting means, just like many other wastewater districts are allowed to do. The Commission does not accept EPA's view that the enforcement context of Boston Harbor still justifies extraordinary remedial measures in this respect. Accordingly, the Commission has not restricted its review of alternatives to MWRA-owned facilities within Massachusetts.

9. Partial and Multiple Alternatives.

The Commission determined that it could consider partial alternatives, not just alternatives that meet the basic objectives at one facility. In particular, the Commission determined that disposal of grit and screenings need not occur at the same location as provided for back-up capacity for sludge disposal. Moreover, back-up capacity for sludge disposal need not be provided at a single facility. Indeed, there are advantages to arranging a package of alternative means of back-up capacity. Having several redundant means of disposal can provide certainty nearly equivalent to a single MWRA-owned facility within Massachusetts. A package of alternatives also permits reliance upon more than technology, and may permit the MWRA to choose among using different alternatives over time according to costs.

V. Overview and Screen of Proposals.

The Commission considered eighteen proposals. Many were screened out from further consideration by the Commission in preparing this report, based upon the considerations discussed in Section IV of this report. The proposals fell under several categories, and were screened out for reasons described below. A decision by the Commission to screen out an option during its own review process should not be viewed as prejudice against such an option or proposed project for other waste disposal purposes unrelated to handling of MWRA residuals.

1. Undeveloped Sites In Massachusetts.

The Commission considered three proposals for undeveloped sites, each in Massachusetts but outside of the MWRA communities, suggested for development of a landfill similar to the Walpole site. Two sites were suggested by their current owners, who wish to remain confidential unless the Commission determines to pursue the site. The other site located in Charlemont, Massachusetts, was suggested by citizens from Walpole, and had been proposed to the MWRA and EPA previously.

The Commission screened out all three of these sites. They do not present feasible alternatives to development of the Walpole site principally for reasons of timing. To be developed as a landfill, each site would need to undergo full environmental impact reviews under the Massachusetts Environmental Policy Act, as well as, potentially, supplemental reviews of the MWRA's residuals management plan by the MWRA under MEPA and by EPA under NEPA. Each site would then require a solid waste management facility permit from DEP, as well as miscellaneous permits. The Commission determined that it was not feasible to complete those procedures within seventeen months, and probably a much longer time.

Additionally, the private proponents of the two sites other than Charlemont were reluctant to open communications with local officials. That reluctance suggested that community acceptance might present significant problems, and lengthen the permitting procedures. In the case of Charlemont, the proponents from Walpole had spoken with local officials, and reported some amicable interest. The Commission's efforts to confirm that interest, however, were not reciprocated by local officials. Nor did the community respond to the Commission's general solicitation letter to its chief municipal officer. The Commission concluded that the local community has no special interest in pursuing the siting of an MWRA landfill.

2. Existing Massachusetts Landfills or Development Efforts.

The Commission considered four locations within Massachusetts, each outside of the MWRA's member communities, that are currently operating landfills or sites currently under development as landfills. Two of these sites survived screening, and are further discussed in the next section.

One proposal screened out by the Commission involved a pending proposal to develop a multi-part solid waste management facility, including a landfill, on a large parcel within Massachusetts. After discussion with representatives of the Commission, the developer withdrew the proposal out of concern for the impact on his development of local community concerns about accepting MWRA residuals. The timetable for completing environmental reviews and permitting for that development also stretches well beyond January, 1993, the date by which the MWRA expects to commence construction at the Walpole site.

The Commission also screened out a proposal by Cohasset Heights, Ltd., the owner and operator of an existing landfill for construction and demolition waste in Cohasset, Massachusetts. The owner is currently seeking to develop the site as a general purpose for solid waste landfill. The owner submitted a Draft Environmental Impact Report ("DEIR") to the Secretary of Environmental Affairs concerning those plans in February, 1991. In her recent certificate on the DEIR, the Secretary found deficiencies in the information provided in the environmental report, particularly concerning existing contamination of ground water in the vicinity of the sites, and has required a supplemental DEIR. The Commission determined that resolution of these significant environmental concerns would likely preclude any timely development of the site to provide long-term back-up capacity for the MWRA's sludge disposal.

Moreover, the Commission determined that the Cohasset site was highly unlikely to receive sufficient community acceptance as a site for MWRA sludge, to encourage the MWRA to elect to pursue this option. Specifically, on June 26, 1991 the voters at Cohasset's special town meeting passed resolutions opposing the disposal of any Boston Harbor residuals within the Town, and urging all relevant elected officials to take action to oppose the selection of any site in Cohasset for this purpose.

The Commission's decision to screen out these two options from further review in the context of this report is not intended to prejudice the question of these sites' ultimate suitability as landfills generally; nor is it intended to preclude these or other landfill projects from responding to a request for proposals, should one be issued by the MWRA.

A proposal by Laidlaw Waste Systems concerning its solid waste landfill and its proposed expansion in Plainville, Massachusetts was held for further review. So was a proposal by Norfolk citizens that the MWRA expand its existing sludge landfill in Clinton, Massachusetts, which currently serves the MWRA-owned and operated wastewater treatment plant in Clinton.

3. Out-of-state Landfill Proposals.

The Commission considered three proposals for transportation of sludge to out-of-state landfills, and retained two for further analysis. One of the proposals came from Integrated Waste Services, Inc., a company based in Buffalo, New York that has successfully handled municipal solid wastes from that city. The Company presented a proposal to the Commission to construct facilities to dewater, transport, and dispose the MWRA's entire sludge generation in out-of-state landfills instead of sending it through the Quincy pelletizing facilities. The Company withdrew its proposal upon understanding that the Commission's focus concerned back-up capacity for sludge disposal, and that the Commission was not reexamining the sludge pelletizing facilities.

A proposal by Intermodal Technologies, Inc. ("ITI") and Chambers Development Company to transport sludge to one or more existing or developing landfills outside of Massachusetts was presented to the Commission. This proposal was held for further consideration.

The other proposal held for further evaluation came from the East Carbon Development Corporation ("ECDC") based in Utah. ECDC's proposal to the MWRA to provide back-up capacity at a landfill currently under development in East Carbon, Utah was first presented in 1990.

4. Out-of-state Land Application.

The Commission received one proposal from Houqua & Company, Inc., of Milton, Massachusetts involving transportation of dewatered sludge or sludge pellets out-of-state for land application at strip mining or other land reclamation projects. This proposal was held for further review.

5. Ocean Dumping Proposals.

The Commission received three proposals from proponents of various technologies to treat sludge prior to disposal in the ocean. All of the proponents acknowledged that their proposals were not permissible under current law. The Commission accordingly screened out each of these proposals. Convincing Congress within the next seventeen months to permit ocean dumping

of treated sludge is simply too unlikely, even if the proposals were otherwise environmentally sound and feasible.

6. Innovative Technology Proposals.

The Commission received three proposals involving construction at the Quincy Shipyard site of additional facilities to convert sludge to beneficial uses: briquettes suitable for use as industrial fuel, and two proposals to gasify sludge to power electric generating facilities. None of these technologies were demonstrated; each would require very substantial capital costs inconsistent with the focused need to handle back-up capacity for sludge; each would involve the construction of additional facilities at Quincy; and none were permittable within the required schedule. All three were screened out.

7. Co-Combustion with Municipal Solid Waste.

The Commission received one proposal for modifying an existing municipal solid waste resource recovery facility to provide standby capacity to co-combust sludge with municipal solid waste at a facility in Massachusetts. The Commission held this proposal for further review.

8. Conclusion

The Commission screened out twelve of eighteen proposals, and held six for further review.

Also, the Commission notes its belief that many more than six proposals worthy of detailed review undoubtedly would emerge in response to a formal request for proposals by the MWRA. Were the MWRA to evince serious interest in co-combustion with municipal solid waste or in out-of-state landfills or land reclamation, the Commission believes there are additional vendors who would respond.

VI. Detailed Review of Potentially Viable Alternatives.

1. Laidlaw Waste Systems Landfill in Plainville, Massachusetts.

Laidlaw Waste Systems presented a proposal concerning its existing solid waste landfill in Plainville, Massachusetts. Laidlaw currently has a three-year contract from the MWRA for disposal of grit and screenings from the southern half of the MWRA's sewer system. Grit and screenings from other components of the MWRA system currently go to other commercial landfills under similar long-term contracts.

Laidlaw's new proposal is limited to continuation of its acceptance of grit and screenings. Laidlaw has pending proposals to expand its facility in Plainville. Laidlaw has no interest in complicating its local community relations by proposing to provide back-up capacity for Boston Harbor sludge at Plainville. However, Laidlaw did express interest in arranging out-of-state facilities for sludge back-up.

Accordingly, Laidlaw's proposal for grit and screenings, by itself, does not constitute a feasible alternative to the Walpole site. On the other hand, the Laidlaw proposal demonstrates that feasible alternatives certainly exist to the use of the Walpole site for grit and screenings. Just as the MWRA currently disposes of grit and screenings at Laidlaw's Plainville landfill and similar facilities, there is no reason to believe the MWRA cannot always find commercial landfill space for its four daily truckloads of grit and screenings. Community acceptance, location, technology, environmental considerations, capacity assurance, permitting, capacity, and life span criterion are all unproblematic as they relate to use of existing and future commercial landfills for grit and screenings.

Cost is the one criterion that may inhibit the use of commercial landfills for grit and screenings. The MWRA projects lower long-term costs to construct and operate the Walpole landfill for grit and screenings as compared to long-term use of commercial landfills. This cost advantage would increase to the extent that capacity in the Walpole landfill in fact is not consumed for sludge, and remains available for grit and screenings after the year 2020. While the MWRA's analysis seems sensible, representatives of Walpole have disputed the MWRA's projections on the ground that they overstate commercial landfill costs and understate transportation costs associated with using Walpole. The Commission has not been able fully to resolve that dispute, partly due to the absence of concrete bids from Laidlaw or others in response to a request by the Authority for proposals to handle grit and screenings over the mid-term (5 to 10 years).

The Commission concludes that commercial landfills certainly provide feasible alternatives to the Walpole site for grit and screenings, possibly at greater cost. Use of such landfills for grit and screenings certainly could form one component of a package of alternatives to the Walpole site.

Finally, the Commission questions the regulatory need to lock the MWRA into a twenty-five year solution for grit and screenings. A succession of mid-range contracts for disposal of the grit and screenings would seem sufficient.

2. MWRA's Clinton Sludge Landfill.

As background the Metropolitan District Commission agreed, in the 1930s, to provide wastewater services to the Town of Clinton and three surrounding communities in central Massachusetts as mitigation for construction of a water supply reservoir. The MWRA inherited this obligation, including a wastewater treatment plant that the MDC had developed in Clinton. The MWRA is engaged in current construction to upgrade that facility in order to comply with applicable EPA and DEP requirements.

As with the Boston Harbor facilities, one component of the Clinton facilities planning has concerned sludge disposal. In this case, the MWRA followed the MDC's 1981 recommendation to construct a landfill to accept dewatered sludge cake. The MWRA selected a site adjacent to the Town of Clinton landfill. The site was conveyed by the Town of Clinton to the MWRA in March, 1988. The sludge landfill has been built, covers 8.5 acres, and can handle 73,000 cubic yards of sludge cake, or approximately 15 years of sludge generated by the Clinton facility. This site includes another five acres that can be developed to provide some additional capacity.

As developed, the site was intended exclusively for the sludge from the Clinton facility. The MWRA made assurances to the Town of Clinton in connection with the conveyance of the parcel in March, 1988, that the site would not be used for sludge disposal from Boston Harbor. Also, the landfill was planned, designed, and constructed in part through use of state and federal grants that may limit use of the site to the intended purpose of accepting sludge from the Clinton facility. Designating the Clinton site as a back-up facility for Boston Harbor sludge disposal, or substantially revising the plans for the Clinton landfill, would require renegotiation of those arrangements.

Further, since August, 1988, the MWRA has been under a consent decree from the U.S. District Court, a decree distinct from the Boston Harbor consent decree, to come into compliance at

all of the Clinton facilities by October, 1991. Substantial changes to the use of the Clinton sludge landfill would also require revisiting that consent decree.

A group of citizens from Norfolk has advanced a proposal to expand the Clinton site substantially as a substitute for the Walpole site. The expansion would consist of several separate phases, including a vertical expansion of the existing landfill to create additional capacity; utilization of the remaining MWRA-owned five acres next to the existing landfill; use of adjacent, MDC-owned parcels; and ultimately filling the valley that would be created between the expanded sludge landfill and the Town of Clinton's adjacent, closed and capped landfill. In addition, the proponents suggest a possible relationship with the owners of another adjoining site in a neighboring town where private developers are currently seeking a site assignment to develop a solid waste landfill.

Members of the Commission looked hard at this proposal, which had attracted substantial support prior to the Commission's formation. Numerous meetings were held with local officials, representatives of the MDC and the MWRA and the proponents. The proposal has some clear attractions. On balance, however, the Commission does not view the proposal as a viable, full alternative to development of the Walpole site. However, the site could potentially provide a partial alternative, for the reasons that follow.

There are several attractive features of this proposal. The MWRA already owns a key portion of the site, which operates in a community that has accepted a sludge landfill. Other portions of the site are also owned by the public, through the MDC or the Town of Clinton. There are good rail connections to Quincy, and the site is remote from residences.

Perhaps more important, the proposed use of the site for Boston Harbor residuals has not aroused major local opposition. Despite the 1988 understanding that the development of a sludge landfill for the Town of Clinton was not intended for disposal of Boston Harbor sludge, local officials have expressed cautious interest to members of the Commission in an appropriate development of the site.

There are also, however, serious negatives. All of the capacity at the existing landfill is committed to the certain needs of the Clinton wastewater treatment plant. That existing capacity only extends for fifteen years, when the remaining five-acre site is scheduled for development for the same purpose. In other words, all of the existing capacity is already committed. Development of the sites to provide back-up capacity for sludge disposal from Boston Harbor would entail finding new capacity

through an increasingly difficult series of phases: expansion of the existing landfill vertically, developing new capacity on adjacent sites, etc. While these steps may appear technically feasible, the Commission determined that it would not be possible to initiate and complete all of the planning and permitting steps necessary to confirm if they are feasible prior to January, 1993.

Moreover, there are significant environmental and hazardous-waste liability considerations that complicate development of the Clinton proposal. Full development of the proposal would require the MWRA to tie its sludge landfill into the Town of Clinton's existing, closed landfill. Although that tie-in may be technically feasible, the MWRA Board of Directors has expressed concern about the liability consequences of becoming entangled with the potential leachate of the Town landfill.

Therefore, the Commission has serious reservations about the viability of the Clinton parcels for use as an alternative to the Walpole site.

3. ITI/Chambers Development Company, Inc.

The Commission received a proposal jointly offered by two companies: Chambers Development Company, Inc., a Pennsylvania company that owns and operates landfills and provides comprehensive recycling and waste management services for 60 municipalities and over 10,000 commercial/industrial customers in the eastern United States; and Intermodal Technologies, Inc. ("ITI"), a New Hampshire company specializing in transporting bulk materials using different modes of transportation.

In their proposal, ITI/Chambers would transport MWRA sludge by rail connections from the MWRA's sludge pelletizing plant at Fore River, Quincy, to one of Chambers' landfills located in eastern U.S. states (e.g., Virginia, Georgia). Chambers currently has a system of 11 operating landfills for the disposal of municipal waste and sludge. Chambers is developing three additional sites, projected to be operating within a year. For example, Chambers has recently opened a landfill in Charles City County, Virginia; this facility is a triple-lined sanitary landfill that is licensed to eventually cover 289 acres, accept 2,000 tons per day of waste, and have a total capacity of 25 million tons.

ITI/Chambers has recently signed a multi-year contract with New York City to handle sludge transportation and disposal at a cost of approximately $115 per ton.

ITI/Chambers indicate a willingness and interest in: signing long-term contracts for sludge and/or grit and screening disposal; offering waste management at a specific landfill, or from system capacity (i.e., capacity assured regardless of what happens at a specific landfill location); providing the option of preserving stand-by capacity that could be used within a certain notification period (e.g., on five days' notice; or on 60 days' notice); and responding concretely to a MWRA competitive procurement.

The Commission expects that Chambers would submit a proposal in response to an MWRA request for proposals for long-term, back-up capacity to handle sludge or sludge pellets.

4. East Carbon Development Corp.

The East Carbon Development Corporation ("ECDC") in East Carbon, Utah, owns a 2400 acre site on which it is developing a state-of-the-art landfill in Utah. The facility is expected to be fully operational in the first quarter of 1992 with an initial 7 million cubic yard cell for "land farming" municipal sludge. It has recently issued bonds totaling $40 million for site development and construction of specialized railroad cars for transporting sludge. Several west and east coast U.S. cities are negotiating final contract details with the full approval of EPA to ship sludge out of their respective states.

The ECDC project appears to satisfy all of the Commission's criteria and has several attractive advantages. There are written expressions of support and solicitation for the use of this site by many officials including the City of East Carbon and East Carbon County. The landfill is located in a very remote mining area with less than 1000 people living within 15 miles of the site. It is serviced by direct railroad access with 18 million tons of coal shipped from the county annually and significant backhaul potential in the empty cars. It is fully permitted with an environmental protection system of triple liners and leak detection systems. There is approximately 200 million cubic yards of permitted long-term capacity. The costs of the use of the site or, the more likely scenario of reserving back-up capacity, offer interesting cost-saving potential via the insurance plan type of arrangement.

Representatives of the ECDC have proposed the use of this landfill as a back-up facility for the MWRA's sludge pellets and cake with a unique "insurance plan" concept. This option was not available to MWRA during its early deliberations.

The two options for the cost of the sludge insurance plan are described as a minimum deposit plan and premium value plan.

An example of the minimum deposit options would be reserving a minimum of 200,000 cu. yds. at $6 per yard. The MWRA would either use the space or have the ECDC maintain it for the MWRA as the required back-up capacity. The $1,200,000 reservation fee would have a term of 10 years at which time it would have to be renewed at the $6 per yard price adjusted by the Consumer Price Index (CPI) index. If the space were used, MWRA would pay transportation costs currently estimated at less than $55 per ton, plus handling fees of $48 per ton also to be adjusted by the CPI over the life of the contract.

Under this plan, which might be considered as part of a package of alternatives, the minimum cost for ten years of back-up capacity is $1,200,000 and the maximum depends upon the number of tons that ultimately would be sent to Utah to be landfilled.

The more attractive second option is the "premium value" plan, where MWRA would pay a reservation fee sufficient to handle the entire output of sludge and/or grit and screenings for a thirty-year period. The fee would be $10,000,000. If the space were used, the MWRA would pay shipping costs ($55 per ton) plus handling costs ($48 per ton) with annual increase to be no more than 80 percent of the CPI increase for each year. In addition, under this plan, the entire $10,000,000 would be returned to MWRA in annual $333,333 increments so that if no disposal space were used, the entire sum would be recouped. If the site were used during any given year, the costs of handling would be deducted from the $333,333 premium and the difference would be returned to the MWRA.

The plan offers a guaranteed back-up capacity at competitive prices with the added incentive that if the current MWRA plan for reuse of the sludge pellets is successful, the "insurance premium" is returned to the MWRA in full, with the only cost to the MWRA being the opportunity cost associated with not using the funds site for some other purpose during that time.

Because of the increasing use of railroads for the shipment of sludge-like material, there have been recent significant technological advances in railroad car containers and their operations especially in intermodal situations. These advances and the inevitable competition in rates could provide further advantages for the back-up option.

The negative factor is EPA's insistence upon an in-state solution.

As with other options, a more detailed analysis of costs would need to occur following East Carbon's expected submission of a formal proposal in response to a solicitation issued by the MWRA.

5. Houqua & Company, Inc. and AD + Soil Inc.

Houqua & Company, Inc. working with AD + Soil, Inc. of Kennett Square, PA, a full service environmental contracting firm which has successfully developed and implemented long-term, turn key beneficial use programs for major municipalities sludge at sites in Ohio and Illinois has proposed to handle MWRA sludge and/or pellets for such beneficial reuse at out-of-state sites.

Representatives of Houqua and AD + Soil, Inc. propose to utilize sludge and/or pellets to provide organic material in mine reclamation programs for sites owned by Peabody Coal Company under an exclusive agreement between AD + Soil and Peabody Coal. On Peabody's disturbed sites, typical soil properties such as organic matter and moisture have been altered or lost. To re-establish vegetation, a nutrient base must be provided following all phases of backfilling and recontouring. MWRA's sludge is expected to be appropriate to supply the required nutrient base.

The dewatered sludge would be loaded into watertight containers at the dewatering facility and placed on rail cars at the Fore River Staging Area in Quincy. After loading, the sludge would be transported to Peabody's reclamation sites in Ohio and/or Illinois. Peabody Coal has a rail siding into their sites, providing direct transportation from the source to the ultimate utilization sites.

As with other out-of-state alternatives, it appears as though this proposed activity is already permitted and has received some degree of local acceptance since this activity results in the reclamation of strip mines.

The Commission believes that Houqua/AD + Soil would submit a proposal in response to a MWRA request for proposals.

The Commission believes that this alternative is feasible if out-of-state back-up capacity is allowed, but may be more costly than implementation of the Walpole alternative when consideration is given to the fact that grit and screenings must still be disposed of at either Walpole or a commercial landfill. However, the additional cost burdens will not be fully known until firm price proposals are received via the MWRA procurement process.

6. Ogden Martin Systems, Inc.

Ogden Martin Systems, Inc., of Fairfield, New Jersey, operates a number of municipal solid waste resource recovery facilities in the United States, including a facility in Haverhill, Massachusetts. Two of those facilities, one in

Indianapolis, Indiana, and one in Huntsville, Alabama, are capable of combustion of municipal wastewater treatment plant sludge with municipal solid waste. Ogden Martin's technology, the "Martin System" developed in Europe, has also successfully been used to co-combust municipal sewage sludge with municipal solid waste in Europe for many years.

Representatives of Ogden Martin proposed to the Commission that Ogden could modify its facility in Haverhill to co-combust sludge from the MWRA's facility. Representatives of the Commission met with representatives of MWRA and the DEP to evaluate the environmental and technical feasibility of Ogden's proposal. They concurred that the proposed co-combustion is technically and environmentally feasible. Capital improvements to the existing facility would be required, but could likely be designed and implemented within a reasonable timeframe.

The Commission determined that modifying Ogden's existing facility in Haverhill to accept sludge should not impose significant new burdens on Haverhill. Indeed, the City of Haverhill has its own wastewater treatment plant which will have long-term needs to dispose of sludge. Haverhill's current method of sludge disposal -- use as cover at a closed City landfill -- has a limited future. While composting of Haverhill's sludge is currently being investigated by the municipality, the Commission determined that Ogden might be able to win community acceptance for modification of its Haverhill facility to accept sludge in response to a concrete proposal with appropriate local community mitigation.

The Commission also determined that the necessary modification could probably be permitted and constructed in time to satisfy the Court's schedule. The principal permitting requirements are modifications to the facility's existing air plans approval and solid waste plan approval. The modification also would require a Notice of Project Change to the Secretary of Environmental Affairs under the Massachusetts Environmental Policy Act, and might require preparation of a supplemental environmental impact report. The facility additions would have to be permitted within the context of the upcoming requirements of the new Clean Air Act Amendments of 1990. While the schedule would be tight, the Commission finds that these activities could be completed within the next seventeen months if the MWRA, DEP and EPA cooperated.

The Ogden Martin mass fired waterwall resource recovery facility in Haverhill consists of two units, each with a rated capacity to combust 825 tons per day (tpd) of mixed solid waste. The Ogden proposal provides for the construction of a storage silo in which dewatered sludge or pellets would be stored and

metered directly into the combustion chamber for incineration with the proper ratio of mixed solid waste.

MWRA anticipates the production of 308 tpd of sludge cake (dewatered to 25 percent solids) from its primary treatment facilities in 1995. In 1996, when secondary treatment reaches 45 percent of its ultimate design capacity, the quantities of sludge will increase to 480 tpd of dewatered sludge cake. In 1997, when secondary treatment reaches 90 percent of its ultimate design capacity, the quantities of sludge will increase to 652 tpd of dewatered sludge cake. Finally, in 1999 when secondary treatment reaches 100 percent of its design capacity, it is anticipated that the MWRA facilities will produce 688 tpd of dewatered sludge on a dry weather flow basis.

Given these quantities of dewatered sludge cake, the Commission questions the ability of the Ogden facility in Haverhill to process the quantities of sludge produced by MWRA on an as-received daily basis. It is likely that significant storage capacity would need to be built into the system, at some point, to store the dewatered sludge if the Quincy pelletizing facility were off-line for a period of up to six months.

This storage/capacity question would need to be resolved prior to relying on the Ogden Martin facility as a complete solution to MWRA sludge back-up requirements. It is possible that the Ogden facility could be part of a package or group of alternatives. This could include in-state disposal or out-of-state shipment of sludges to handle back-up should the Quincy facility go off-line for a period of time, and to receive any excess of the ability of the Ogden facility to either process the daily sludge quantities or store the material in an acceptable fashion somewhere in the overall MWRA system. The storage of dry (up to 80 percent solids) sludge pellets does not present a significant problem and it is likely that the Ogden facility could process this output on a daily basis because the tonnages are far less than those expected, utilizing a 25 percent dewatered sludge cake as the worst case storage/capacity benchmark.

Capital costs for engineering refinements to the Ogden facility are presently unknown to the Commission. Such costs, along with any reserve capacity charges or tipping fees would need to be submitted by Ogden in response to a Request for Proposals issued by the MWRA. The Commission expects that Ogden Martin would respond to a MWRA solicitation, if one were issued in the near future.

Community acceptance, however, remains unsettled. Representatives of the Commission communicated with municipal officials, and learned that Ogden's existing facility has faced

significant community opposition in the past and still faces local neighborhood complaints. Specifically, the current Mayor of Haverhill was elected on a platform that included opposition to the opening of the current facility even though it had already received all required state and local permits. In 1988 and 1989, Haverhill's Board of Health proposed to revoke the facility's site assignment. That dispute was finally resolved, however, and the combustion facility itself is currently operating without significant problems.

Ogden still faces neighborhood complaints, however, arising out of its ownership of a closed landfill at its site that had been operated by a predecessor. There are odor problems at the landfill, which Ogden is seeking to resolve without complete success to date. Modifications to the landfill in the form of landfill gas flaring systems are currently going into service to remedy the problem.

In those circumstances, the Mayor of Haverhill and other municipal officials informed the Commission that they had substantial doubt that any proposal by Ogden to modify its combustion units to handle Boston Harbor sludge could receive their support or community support generally.

In light of these community acceptance concerns and in spite of the efforts of Commission members and representatives of the Administration to discuss with municipal officials various mitigation possibilities to make the facility modifications more attractive, the Commission is not confident that the Haverhill facility could be secured as an alternative to the Walpole site. The Commission believes strongly that it would be inappropriate for the MWRA to pursue an alternative at this point that would simply open up new battle lines with a local community.

VII. Conclusions and Recommendations

The Commission's conclusions are interspersed throughout this report, and summarized in the Executive Summary.

The following presents a summary of the key conclusions and recommendations.

Conclusions:

1. There are technically feasible alternatives to the Walpole site, but the Commission cannot definitively state that any of them can be developed or procured on the Court's mandated schedule. Nor is it known today whether the use of any alternative or set of alternatives would be cost-effective relative to developing and using Walpole.

2. Based on the proposals submitted to the Commission, the Commission did not identify another single landfill site within Massachusetts to substitute completely for the Walpole site within the court-ordered schedule.

3. The existence of alternatives depends upon separating the methodology of grit and screenings disposal from the provision of back-up capacity for sludge disposal. A decision to utilize commercial landfills for disposal of grit and screenings may increase the MWRA's long-term costs of that function.

4. The Commission believes there are out-of-state existing landfills and in-state existing combustion/resource-recovery facilities that could handle all or a portion of the back-up requirements for the MWRA sludge, and that would respond to a MWRA request for proposals, should one be issued in the near future. Any MWRA procurement process should allow proposals from either type of facility.

5. The Commission recognizes the importance of states taking responsibility for their waste management. The Commission believes that the MWRA has done just that in investing in its sludge pelletizing plant at Quincy. Further, the Commission believes that the Commonwealth has also adopted a responsible in-state alternative by adopting legislation that directs the MWRA to develop a program for MWRA communities to take sludge pellets for their own use as fertilizer.

6. In the Commission's view, therefore, the EPA and the U.S. District Court should not insist upon the absolute certainty of back-up capacity for sludge disposal by requiring an MWRA-owned and controlled landfill in Massachusetts. It should be sufficient for the MWRA to have long-term contractual

arrangements for back-up capacity, if cost and liability issues are acceptable to the MWRA. Such arrangements could include a capacity contract designed to meet the MWRA's needs.

7. The Commission could not conduct a detailed cost comparison between any of the potentially feasible alternatives and the continued development of the Walpole site. Such cost comparisons can only arise after formal procurement efforts by the MWRA produce specific cost proposals.

Recommendations:

The Commission recommends that the Governor urge the MWRA immediately to do all of the following actions:

- attempt to procure long-term back-up capacity for sludge disposal via a competitive solicitation from existing landfills and resource-recovery facilities, in and out of state;
- attempt to procure long-term or short-term primary grit and screenings disposal capacity; and
- negotiate with the EPA to accept changes to the MWRA's residuals management plan to allow the MWRA to use credible proposals should they emerge from a forthcoming solicitation.

In making these recommendations, the Commission recognizes that it will cost the MWRA some expense to carry out the procurement process, but urges the MWRA to do so in light of circumstances that have changed since the MWRA selected the Walpole site.

APPENDIX A

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE DEPARTMENT
STATE HOUSE • BOSTON 02133

WILLIAM F. WELD
GOVERNOR

ARGEO PAUL CELLUCCI
LIEUTENANT GOVERNOR

BY HIS EXCELLENCY

WILLIAM F. WELD
GOVERNOR

EXECUTIVE ORDER NO. 305

ESTABLISHING A HARBOR RESIDUALS
LANDFILL SITING ADVISORY COMMISSION

WHEREAS, the Commonwealth and the Massachusetts Water Resources Authority ("MWRA") are, by order of the United States District Court for the District of Massachusetts, engaged in a long-term plan to clean and revitalize the waters of Boston Harbor by, among other means, the proper treatment and disposal of sewage generated by the cities and towns of the MWRA district; and

WHEREAS, part of that plan calls for and requires the siting of a landfill in Massachusetts available for the disposal of grits, screenings and any sludge which is not otherwise disposed of through the marketing of pelletized fertilizer; and

WHEREAS, the siting process engaged in to date by the MWRA has led to the designation of a landfill site in Walpole, MA, presently owned by the Commonwealth; and

WHEREAS, a review of the Walpole site and the siting process have resulted in conflicting expert opinion as to whether it is the least environmentally damaging site available, and whether it could be hazardous to present and future public water supplies; and

WHEREAS, the General Court has twice rejected the transfer of the Walpole site to the MWRA for use as a landfill; and

WHEREAS, the Federal Court has imposed a sewer moratorium on the MWRA district which threatens and impairs economic growth and the possibility of economic recovery in Massachusetts; and

WHEREAS, if the moratorium is to be permanently lifted, the Executive and Legislative branches of the Commonwealth must transfer or otherwise acquire a site (or arrange alternative technologies) agreeable to the Court for use by the MWRA for these purposes;

NOW, THEREFORE, I, William F. Weld, Governor of the Commonwealth of Massachusetts, by virtue of the authority vested in me as supreme executive magistrate, do hereby order the following:

1. There is established a Harbor Residuals Landfill Siting Advisory Commission (the "Commission") consisting of nine (9) members;

2. It is the responsibility of the Commission to:

   a. Identify, investigate and analyze landfill sites and/or technologies which it deems to be viable alternatives to the Walpole site; and

   b. To determine which sites and/or technologies could be permitted and operational by March 1994, consistent with the Court's schedule; and

   c. To report to the Governor the result of its work no later than August 1, 1991.

3. The membership of the Committee shall consist of:

   a. The Secretary of Environmental Affairs and two (2) individuals experienced in the siting of or approval of landfills, selected by the Secretary; and

   b. Three (3) members appointed by the Governor; and

c. Three (3) members designated by the MWRA Board if the MWRA chooses to participate in the Commission's efforts, otherwise three additional designees of the Governor.

Given in the Executive Chamber in Boston this 1st day of April in the year of our Lord one thousand nine hundred and ninety-one.

William F. Weld

William F. Weld, Governor
Commonwealth of Massachusetts

Michael Joseph Connolly

Michael Joseph Connolly
Secretary of the Commonwealth

GOD SAVE THE COMMONWEALTH OF MASSACHUSETTS

APPENDIX B

List of Commission Members

NAMES	TITLE
Susan Tierney	Chair, Secretary of Environmental Affairs; Chair of MWRA Board of Directors
Marcia Benes	Executive Director, Massachusetts Association of Health Boards
John J. Carroll	Town Manager, Norwood; MWRA Board Member
Ralph A. Child	Chair, Environment Group, Palmer & Dodge
Richard F. Delaney	Director, Urban Harbor Institute, University of Massachusetts - Boston
Lorraine Downey	Director, Environmental Department, City of Boston; MWRA Board Member
William C. Finn	President, William C. Finn Associates
Richard Gelpke	Assistant Professor of Geography, University of Massachusetts - Boston
Joseph MacRitchie	Legal Counsel, City of Quincy; MWRA Board Member

APPENDIX C

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

August 10, 1989

Paul F. Levy
Executive Director
Massachusetts Water Resources Authority
Charlestown Navy Yard
100 First Avenue
Boston, MA 02129

Dear Paul:

The purpose of this letter is to set forth the agreement reached between the Massachusetts Water Resources Authority ("Authority") and the U.S. Environmental Protection Agency ("EPA") at the July 18, 1989, staff meeting regarding sludge disposal "backup" requirements in the Authority's long-term residuals management program (i.e., for the period 1995-2020). If this letter correctly sets forth the agreement, please sign it below and return a copy to me.

This agreement is subject to evaluation during the completion of State and federal environmental review. It is based on the assumption that the Authority's final approved plan regarding long-term residuals management will be substantially equivalent to its current proposals, and will be fully and timely implemented, but in no way decides these issues. The Authority's current proposals regarding long-term residuals management include: (a) disposal of all of the treatment plant sludge through heat drying the sludge into fertilizer pellets and marketing or otherwise distributing the pellets, and (b) backup landfilling of the sludge or of the fertilizer pellets, if necessary, with development by 1995 of a landfill owned by the Authority with a total capacity of at least 3.17 million cubic yards (Mcy) of which the Authority projects 1.84 Mcy will be needed to accommodate liners, caps, cover and berming, and twenty five years of normal operation involving disposal of grit and screenings, leaving at least 1.33 Mcy capacity available to take sludge or sludge products (the "Available Capacity Remaining" or "ACR"), if necessary. This agreement may be rescinded by either party (on written notice to the other) or modified in writing by both parties, as a result of environmental review or if any of the above assumptions prove to be incorrect for any reason. The Authority has and will study the impacts of the steps specified in this agreement in its long-term residuals environmental review.

The Authority estimates that if it disposes all of its sludge at its proposed landfill without first drying/pelletizing the sludge, the ACR will be used up within three years. If, however, it first reduces sludge volume through drying/pelletizing, the Authority estimates that the ACR will not be used up for fourteen years even under the worst case assumption that all of the pellets must be landfilled. The Authority further estimates that, as long as it is successful in distributing at least 40% of its sludge, the proposed landfill will have sufficient capacity to receive the rest (other 60%) of the dryed/pelletized sludge for the full twenty five year planning period (1995-2020). While the EPA would make somewhat more conservative assumptions, it agrees that the proposed landfill can be expected to provide sufficient backup capacity for at least a decade (under worst case assumptions) or more assuming that the sludge is first dryed/pelletized before being disposed of at the landfill. Of course, the Authority will make every effort to distribute and market its sludge products in order both to conserve landfill ACR and to minimize impacts to the landfill host community.

If at any time the Authority has utilized more of the ACR at its proposed landfill than specified above (under either option A or option B, depending upon which one is selected), the Authority will notify EPA in writing within thirty days of this development. In these circumstances, there will be a presumption that the Authority will take only fertilizer pellets rather than the sludge itself to the landfill (notwithstanding any added expense) until such time as the ACR returns to within the applicable limit, and the Authority will follow this course unless another appropriate procedure is agreed to in writing by the Authority and EPA or set by the U.S. District Court (in U.S. v. MDC et al., Civ. Action Nos. 85-0489-MA and 83-1614-MA). This does not, however, preclude the Authority from taking sludge to the landfill even in these circumstances for the minimum period necessary if it is temporarily unable to produce sludge pellets and taking sludge to the landfill is necessary to avoid the discharge of sludge into waters of the United States or violation of other applicable requirements.

The EPA agrees that the above commitments (if fully carried out by the Authority) resolve the current "backup" issue regarding the Authority's long-term sludge management program raised by the EPA in recent months, assuming that the assumptions set forth above remain true throughout the environmental review and planning process. This agreement, however, does not resolve other concerns the EPA has raised regarding the planned pellet distribution program as set out in EPA's Draft Supplemental Environmental Impact Statement.

The Authority reserves the right to depart from the terms of this agreement if in its management discretion this becomes necessary. Similarly, this agreement does not restrict any of the

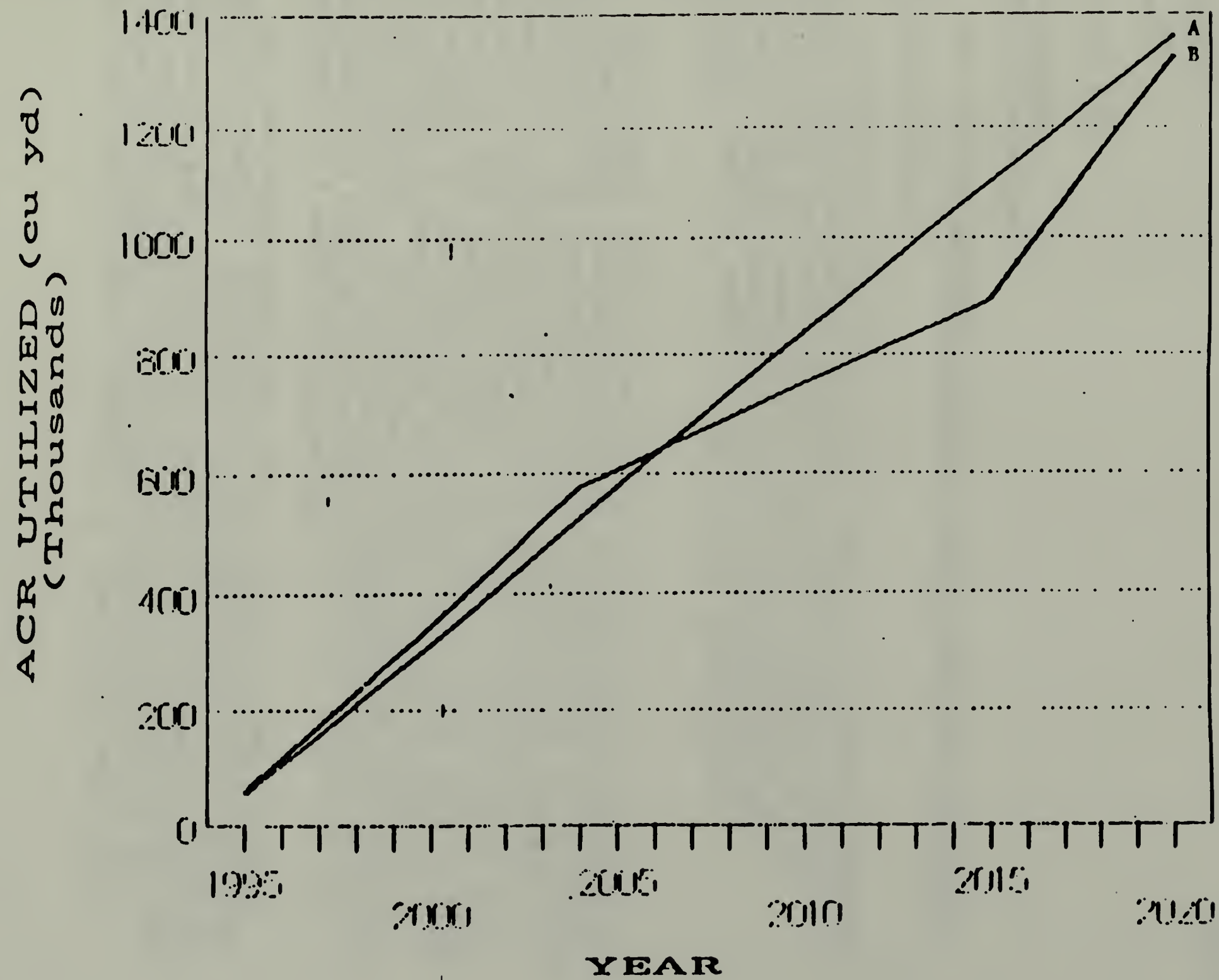
enforcement rights of the United States. Both parties reserve the right to rescind this agreement on written notice to the other, or to modify it in writing by mutual agreement (for example, in response to changed circumstances). However, each party agrees to give written notice to the other before departing from any of the terms of this agreement. In addition, following completion of environmental review, the Authority and EPA contemplate agreeing to a binding court order in the Boston Harbor enforcement case (U.S. v. MDC et al., Civ. Action Nos. 85-0489-MA and 83-1614-MA) establishing requirements for reporting by the Authority (and EPA) regarding the carrying out of this agreement, including (1) a requirement that the Authority report if at any time it has utilized more of the ACR at its proposed landfill than specified under either option A or option B, depending upon which option is selected, (2) a requirement that the Authority or EPA, as applicable, report before departing from the terms of this agreement or rescinding this agreement, and (3) other reporting, to the extent and only to the extent agreed upon by the Authority and EPA or determined to be appropriate by the Court. Any departure from or rescission of this agreement by the Authority may lead to an EPA enforcement challenge to the adequacy of the Authority's residuals management program. The EPA and United States further reserve the right to require adherence to this agreement as a condition for receipt of federal funds and permits.

Sincerely,

Paul G. Keough
Acting Regional Administrator

Agreed: _____
Paul F. Levy
Executive Director

Dated: 8/14/89



Cumulative allowable ACR utilization during the 1995-2020 planning period.

APPENDIX D

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street, Boston, 02202

WILLIAM F. WELD
GOVERNOR

GEO PAUL CELLUCCI
LIEUTENANT GOVERNOR

SUSAN F. TIERNEY
SECRETARY

(617) 727-9800

May 21, 1991

Chairperson,
Board of Selectmen

Re: Harbor Residuals Landfill Siting Advisory Commission

Dear Chairperson:

I write in my capacity as the Chair of the Harbor Residuals Landfill Siting Advisory Commission ("Commission") to solicit confidentially any interest your community may have in (a) serving as the host community for all or a portion of the MWRA/Boston Harbor residuals at new or existing disposal facilities, and (b) receiving appropriate compensatory mitigation.

This letter, which is being sent to all cities and towns of the Commonwealth, solicits your help in identifying any sites or technologies that may provide superior alternatives to use of the Walpole site. At this point in the landfill siting process, the Commission is seeking proposals from communities that would volunteer to host such a disposal facility. Criteria that such alternatives must satisfy are set out later in this letter, along with examples of the mitigation measures that might be available to compensate a community for accepting a harbor residuals disposal facility. The examples of mitigation are provided for your information only; any specific arrangements would need to be negotiated on a case-by-case basis during later stages of the development of a superior alternative.

The Commission appreciates that a community may encounter issues of community acceptability of a harbor residuals disposal facility, and that compensatory mitigation measures may never be sufficient to some citizens to counter the risks and burdens of a harbor residuals facility. Nevertheless, the Commission believes and hopes that superior alternatives to the Walpole site may exist, and solicits your assistance in identifying such sites.

100% RECYCLED PAPER

The Commission is eager to hear from any municipality or private party who may have an acceptable facility or site. If you have any questions regarding any of the information in this request, please feel free to contact me at 617/727-9800 X200, or my Special Assistant, Andrew Brennan, at 617/727-9800 X209. On behalf of the Commissions, I would like to thank you in advance for your participation in this process.

Very truly yours,

Susan F. Tierney

Susan F. Tierney
Secretary of Environmental Affairs

Background

The Commission was established by Governor Weld under Executive Order No. 305 on April 1, 1991, in order to investigate landfill sites and technologies which may be viable alternatives to the site in Walpole, Massachusetts ("Walpole site") selected by the Massachusetts Water Resources Authority ("MWRA") and the U.S. Environmental Protection Agency ("EPA") for construction of a landfill to receive harbor residuals. The Walpole site was selected by MWRA and EPA to receive: (a) four daily truckloads (80 tons) of grit and screenings from the front end of the MWRA's wastewater treatment facilities; (b) non-saleable pellets, if any, from MWRA's sludge pelletizing facility to be built in Quincy, Massachusetts; and (c) dewatered sludge from the MWRA's facilities in the event that the sludge pelletizing facility fails. The EPA has required that landfill capacity at Walpole be available for 0.56 million cubic yards of grit and screenings, and 1.33 million cubic yards of sludge, for a total capacity requirement of 3.20 million cubic yards (including space for liners, berm, bulking material and cover).

The Walpole site is currently owned by the Commonwealth. During 1990, the legislature twice rejected transfer of the site to the MWRA, and Governor Weld opposed the use of the site due to conflicting expert opinion as to whether it is the least environmentally damaging site available, and whether it could be hazardous to present and future public water supplies in the vicinity. Both Walpole and a neighboring community, Norfolk, have strongly opposed use of the Walpole site for these reasons.

Despite these concerns, EPA and the MWRA have continued to press for use of the Walpole site as one component of the court-ordered cleanup of Boston Harbor. On February 25, 1991, moreover, U.S. District Court Judge A. David Mazzone, acting in response to a motion by EPA, imposed a moratorium on additional discharges to the MWRA's sewer system until such time as the MWRA acquires a site suitable for a harbor residuals landfill. A month later, the Judge instructed the Commonwealth to turn over the Walpole site to the MWRA as the only way to lift the sewer ban. Judge Mazzone's original order was upheld by the First Circuit Court of Appeals on April 22, 1991.

Governor Weld and I and many other persons still believe that superior alternatives to the Walpole site may exist. In view of the economic disruption caused by the sewer hook-up moratorium, however, on April 24, 1991, Governor Weld refiled legislation to transfer the Walpole site to the MWRA. That legislation is pending, and I anticipate that it will be enacted promptly.

Passage of the transfer legislation, however, will not lessen the Commission's efforts to evaluate alternatives to use of the Walpole site, and to advise Governor Weld of any potential superior, feasible alternatives. If a superior site emerges, Governor Weld will determine whether to reopen the issue with EPA, MWRA, and the Court, and urge those parties to agree to use the alternative(s) instead of the Walpole site.

The Commission's Task and Members

Executive Order No. 305 defines the Commission's responsibilities as follows:

(a) to identify, investigate and analyze landfill sites and/or technologies which it deems to be viable alternatives to the Walpole site; and

(b) to determine which sites and/or technologies could be permitted and operational by March 1994, consistent with the Court's schedule; and

(c) to report to the Governor the result of its work no later than August 1, 1991.

The membership of the Commission consists of the following persons:

Susan Tierney, Chair	Secretary, of Environmental Affairs, MWRA Board Chair
Marcia Benes	Executive Director, MA Association of Health Boards
John J. Carroll	Town Manager, Norwood; MWRA Board Member
Ralph A. Child, Esq.	Chair, Environmental Group Palmer & Dodge
Richard F. Delany	Director, Urban Harbor Institute, U. Mass - Boston
Lorraine Downey	Director, Environmental Dept., City of Boston; MWRA Board Member
William C. Finn	President, William C. Finn Assoc., Environmental Consulting Firm

Richard Gelpke	Asst. Professor of Geography, U. Mass - Boston
Joseph MacRitchie	Legal Counsel, City of Quincy MWRA Board Member

Criteria

The Commission has decided that, in order for an alternative to be an attractive and viable option for the MWRA and EPA to embrace at this point in the process, the option(s) must meet several criteria. These criteria come from several sources: the long-term needs for harbor residuals disposal; the institutional requirements of EPA and MWRA; and the schedule mandated by the U.S. District Court. The Commission will review suggestions that do not meet all the criteria, since it believes that some flexibility may remain in negotiations with EPA and MWRA. For an alternative to emerge as superior to the Walpole site, however, it must meet or exceed at least most of the criteria.

1. Community Acceptance - A key criterion is that a proposed alternative be able to demonstrate community acceptance of the facility. We assume that any proposal, even if initially offered confidentially in the first instance, would need to be presented to members of the local community in order to give them ample opportunity to air their views. Only alternatives that can show local acceptance could convince EPA and MWRA at this point to accept an alternative to the Walpole site.

2. Schedule and Permitting - The alternative must be fully operational by March, 1994. In addition to the normal planning, permitting, and construction that might be necessary to make a facility operational, an alternative to the Walpole site may require supplemental environmental impact reviews by MWRA, EOEA, and my office as part of the harbor residuals planning process under the Massachusetts Environmental Protection Act and the National Environmental Protection Act.

An additional scheduling consideration is that the court-ordered schedule requires construction of the Walpole site to commence by September, 1992. A practicable alternative to use of the Walpole site must become definite prior to that date in order to avoid commencement of construction at Walpole.

3. Capacity and Life Span - The MWRA requires landfill capacity as the primary disposal means for the grit and screenings from the Harbor project. An alternative to using Walpole for the grit and screenings must therefore be capable of receiving 80 tons (four truckloads) per day of grit and screenings.

As for sludge pellets and dewatered sludge, the amount actually sent to a landfill (or otherwise disposed of) is uncertain, since the facility would have to serve as a back-up to the primary disposal method (i.e., marketing sludge pellets produced at the Quincy pelletizing plant). At best, no regular use of the back-up disposal facility would occur, because the MWRA and the Commonwealth expect 100% use of the pellets as fertilizer. (To encourage that 100% use rate, Governor Weld's legislation to transfer the Walpole site to the MWRA includes requirements that each member community within the MWRA district accept a proportionate share of pellets for use as fertilizer, unless a more lucrative fertilizer market exists.) At worst, if the pellet plant fails to operate, 180 tons of sludge cake per day (i.e., 40 truckloads) would need to be disposed at the back-up facility. This amounts to a total of 1.33 million cubic yards of sludge landfill capacity that must be developed as reserve and ready to receive sludge if necessary. Therefore, any alternative(s) to Walpole must provide such reserve capacity to the MWRA.

4. Costs - Alternatives to the use of the Walpole site must not bear unacceptably higher costs. For the Walpole site, the MWRA will incur initial development/construction costs; on-going annual operating, maintenance and hauling costs over the 25 year life of the facility; and any mitigation costs paid to the local communities.

The MWRA's current estimate of the cost of developing the Walpole site for both grit and screenings and sludge is $63 million (1993 $).

The MWRA's current estimate for the annual cost of operations, maintenance and hauling (29,200 cubic yards of grit and screenings and 438,000 cubic yards of uncompacted sludge per day is $4.02 million (1993 $).

5. Environmental Considerations - An alternative to Walpole must be environmentally acceptable. Generally, the Commission expects that environmental compliance will be assured through the permitting procedures applicable to the alternative. Commission will, however, screen and review any proposals for environmental problems so significant as to disqualify the proposal as a realistic alternative.

6. Technology - The Commission will consider any technology, not limited to landfill disposal, that is available and satisfies the other necessary criteria. Any proposed technology must be proven.

7. Location - The Commission will consider any location, in or out of Massachusetts and in or out of the MWRA district. EPA and MWRA have expressed strong preferences, however, for exclusively in-state facilities due to uncertainties over the long-term costs and viability of exporting wastes. EPA and MWRA, on grounds of equity and community acceptability, also have expressed a preference for a solution within the MWRA district.

8. Capacity Assurance - Another important criterion is that the alternative provide highly certain capacity to MWRA. MWRA and EPA determined in the Harbor residuals facilities planning that led to the selection of the Walpole site that capacity assurance required an MWRA-owned and controlled site. The U.S. District Court has strongly endorsed that conclusion. A successful alternative to use of the Walpole site, accordingly, likely must include MWRA ownership or equivalent capacity assurance.

9. Partial Alternatives - The Commission will consider partial alternatives, not just alternatives that meet all of the foregoing criteria at one facility. Disposal of grit and screening, for example, need not occur at the same location as disposal of sludge pellets. Identical technologies need not be utilized for grit and screenings on the one hand, and sludge +pellets on the other. Assured capacity for an initial period of time at one facility could be coupled with assured capacity at a different facility in the future. The Commission, in other words, is prepared to recommend a combination of proposals if the combination can provide overall satisfaction of the criteria.

Mitigation

The MWRA historically has negotiated mitigation to compensate communities for hosting major harbor clean-up facilities.

The mitigation packages already negotiated with Quincy and Winthrop include both dollars and other support components. Winthrop, which hosts the Deer Island sewage treatment facility, involves $24 million for the fiscal years 1988 through 2000. For Quincy, site of the interim sludge pelletizing plant, the mitigation package consists of $9.0 million over the four years of operation of the facility.

We expect that any proposal to use an alternative to Walpole would include appropriate mitigation. We encourage proposals to specify mitigation requirements.